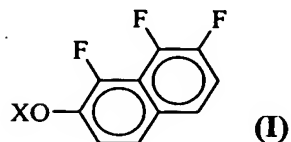


## CLAIMS

1. A compound represented by general formula (I),



wherein X represents a hydrogen atom,  $\text{CF}_3\text{SO}_2$ -, or a saturated or unsaturated

- 5 alkyl group having a carbon number of 1 to 10.

2. A compound according to claim 1, wherein X represents a hydrogen atom.

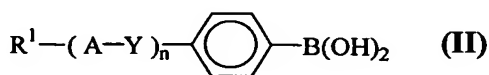
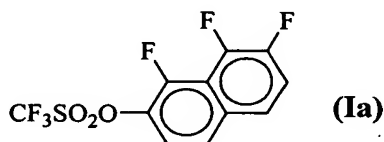
3. A compound according to claim 1, wherein X represents  $\text{CF}_3\text{SO}_2$ -.

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4. A compound according to claim 1, wherein X represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10.

5. A method for producing a compound represented by general formula (III) by

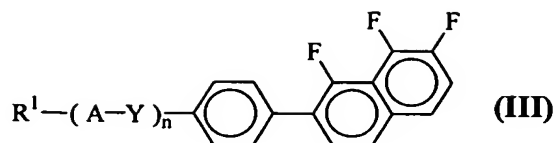
- 15 reacting a compound represented by general formula (Ia) with a compound represented by general formula (II) in the presence of a catalyst,



wherein  $\text{R}^1$  represents a saturated or unsaturated alkyl group having a carbon

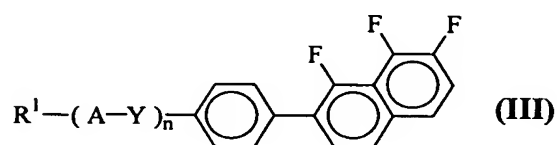
- 20 number of 1 to 10, and Y represents a single bond,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CH}_2\text{O}-$ , and A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a

number of 0 or 1,



wherein  $R^1$ , Y, A, and n represent the same as in general formula (II).

- 5      6.      A compound represented by general formula (III),

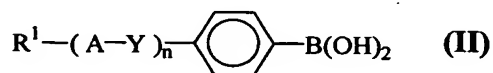
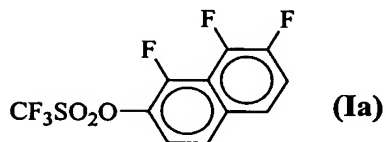


wherein  $R^1$  represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10, and Y represents a single bond,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CH}_2\text{O}-$ , and A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a number of 0 or 1.

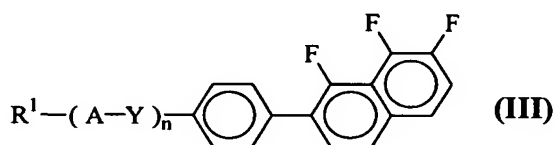
7.      A method for producing a compound represented by general formula (IV) comprising:

reacting a compound represented by general formula (Ia) with a compound represented by general formula (II) in the presence of a catalyst to produce a compound represented by general formula (III); and

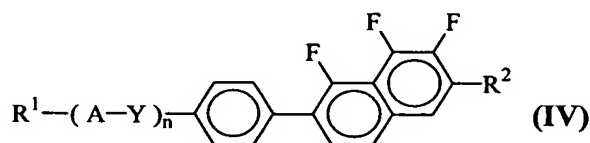
alkylating or alkoxyating the compound represented by general formula (III),



wherein  $R^1$  represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10, and Y represents a single bond,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CH}_2\text{O}-$ , and A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a number of 0 or 1,



wherein  $R^1$ , Y, A, and n represent the same as in general formula (II),



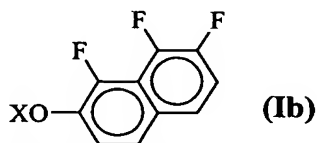
wherein  $R^1$ , Y, A, and n represent the same as in the general formula (II), and  $R^2$  represents a saturated or unsaturated alkyl or alkoxy group having a carbon number of 1 to 10.

8. A method for producing a compound represented by general formula (VI) comprising:

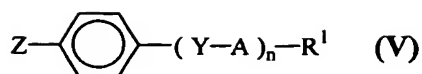
lithiating 6-position of a compound represented by general formula (Ib);

15 reacting the compound represented by general formula (Ib) with trimethoxyborane to produce boronic acid; and

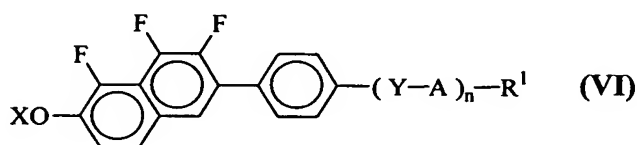
reacting the boronic acid with a compound represented by general formula (V) in the presence of a catalyst,



20 wherein X represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10,



wherein Z represents an iodine atom, a bromine atom, a chlorine atom, or a trifluoromethanesulfonyloxy group, and R<sup>1</sup> represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10, and Y represents a single bond, -CH<sub>2</sub>CH<sub>2</sub>-, or -CH<sub>2</sub>O-, A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a number of 0 or 1,

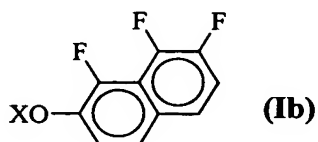


wherein X and R<sup>1</sup> represent saturated or unsaturated alkyl groups having a carbon number of 1 to 10, and Y represents a single bond, -CH<sub>2</sub>CH<sub>2</sub>-, or -CH<sub>2</sub>O-, and A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a number of 0 or 1.

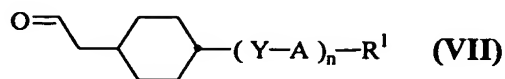
9. A method for producing a compound represented by general formula (VIII) comprising:

lithiating 6-position of a compound represented by general formula (Ib);  
 reacting the compound represented by general formula (Ib) with a cyclohexylacetaldehyde derivative represented by general formula (VII);  
 dehydrating a product obtained by the reaction between the compounds represented by general formulae (Ib) and (VII); and

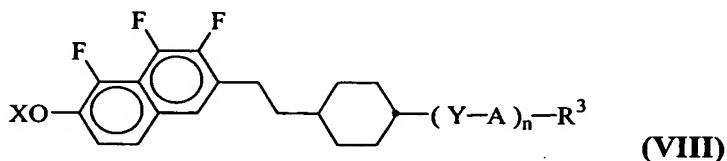
hydrogenating a double bond produced by the dehydration,



wherein X represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10,



wherein  $R^1$  represents a saturated or unsaturated alkyl group having a carbon number of 1 to 10, and Y represents a single bond,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CH}_2\text{O}-$ , and A represents a trans-1,4-cyclohexylene group or a 1,4-phenylene group, and n represents a number of 0 or 1,



wherein X and  $R^3$  represent saturated alkyl groups having a carbon number of 1 to 10, and Y represents a single bond,  $-\text{CH}_2\text{CH}_2-$ , or  $-\text{CH}_2\text{O}-$ , and A represents a trans-1,4-cyclohexylene group or 1,4-phenylene group, and n represents a number of 0 or 1.